AMENDMENTS TO THE CLAIMS

1-16. (Canceled)

17. (New) A compression refrigeration system comprising:

a closed circulation circuit comprising a compressor, a heat rejector, an expansion device, and a heat absorber, said closed circulation circuit being operable to circulate a refrigerant and pressurize the refrigerant to a high-side pressure, the high-side pressure being supercritical; and

a controller operable to estimate a parameter value reflecting energy consumption to determine an optimum high-side pressure by perturbation of the high-side pressure during operation of said compression refrigeration system;

wherein said compression refrigeration system operates at the optimum high-side pressure after the optimum high-side pressure has been determined.

18. (New) The compression refrigeration system of claim 17, wherein said closed circulation circuit includes the refrigerant, and said refrigerant comprises carbon dioxide.

19. (New) The compression refrigeration system of claim 17, wherein the parameter value reflects minimum operable energy consumption.

20. (New) The compression refrigeration system of claim 17, wherein said heat rejector lowers a temperature of the refrigerant, said heat rejector utilizing a heat sink; and

wherein the parameter value is a difference in temperature between the refrigerant and the heat sink.

21. (New) The compression refrigeration system of claim 17, wherein said heat rejector lowers a temperature of the refrigerant, said heat rejector utilizing a heat sink; and

wherein said controller estimates the parameter value by increasing the high-side

pressure, monitoring an impact of increasing the high-side pressure on a difference in temperature between the refrigerant and the heat sink, and discontinuing increasing the high-side pressure when the impact is below a threshold level.

22. (New) The compression refrigeration system of claim 21, wherein the threshold level varies according to at least one operating condition.

23. (New) The compression refrigeration system of claim 17, wherein the parameter value is an outlet temperature of said heat rejector.

24. (New) The compression refrigeration system of claim 17, wherein said controller estimates the parameter value by varying the high-side pressure and determining the optimum high-side pressure corresponding to a minimum operable energy consumption of the compression refrigeration system.

25. (New) The compression refrigeration system of claim 17, wherein said compressor pressurizes the refrigerant to the optimum high-side pressure after the optimum high-side pressure has been determined.

26. (New) The compression refrigeration system of claim 17, wherein said controller controls a perturbation of the high-side pressure and establishes a correlation between the high-side pressure and the parameter value, the parameter value reflecting a minimum operable energy consumption.

27. (New) A method of operating a compression refrigeration system including a closed circulation circuit comprising a compressor, a heat rejector, an expansion device, and a heat absorber, the method comprising:

operating the compression refrigeration system by circulating a refrigerant through the closed circulation circuit and pressurizing the refrigerant to a high-side pressure, the high-side pressure being supercritical;

estimating a parameter value reflecting energy consumption to determine an optimum high-side pressure by perturbation of the high-side pressure during operation of the compression refrigeration system; and

operating the compression refrigeration system at the optimum high-side pressure after the optimum high-side pressure has been determined.

28. (New) The method of claim 27, wherein the refrigerant comprises carbon dioxide.

29. (New) The method of claim 27, wherein said estimating of the parameter value comprises:

providing a controller which controls a perturbation of the high-side pressure and estimates the parameter value, the parameter value reflecting minimum operable energy consumption.

30. (New) The method of claim 27, wherein said operating of the compression refrigeration system comprises the heat rejector lowering the temperature of the refrigerant, the heat rejector utilizing a heat sink; and

wherein the parameter value is a difference in temperature between the refrigerant and the heat sink.

31. (New) The method of claim 27, wherein said operating of the compression refrigeration system comprises the heat rejector lowering the temperature of the refrigerant, the heat rejector utilizing a heat sink; and

wherein said estimating of the parameter value comprises:

increasing the high-side pressure,

monitoring an impact of increasing the high-side pressure on a difference in temperature between the refrigerant and the heat sink,

discontinuing increasing the high-side pressure when the impact is below a threshold level.

32. (New) The method of claim 31, wherein the threshold level varies according to at least one operating condition.

33. (New) The method of claim 27, wherein the parameter value is an outlet temperature of the heat rejector.

34. (New) The method of claim 27, wherein said estimating of the parameter value comprises:

varying the high-side pressure;

determining a high-side pressure corresponding to a minimum operable energy consumption of the compression refrigeration system.

35. (New) The method of claim 27, wherein said operating of the compression refrigeration system after the optimum high-side pressure has been determined comprises pressurizing the refrigerant to the optimum high-side pressure.

36. (New) The method of claim 27, wherein said estimating of the parameter value comprises:

providing a controller which controls a perturbation of the high-side pressure and establishes a correlation between high-side pressure and the parameter value, the parameter value reflecting a minimum operable energy consumption.